Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A photonic channelized receiver, comprising:

an optical source, of the receiver, that produces a plurality of optical signals at respective, spaced wavelengths;

an optical combiner, of the receiver, configured to combine the plurality of optical signals into a common beam;

an electro-optical modulator, of the receiver, that modulates the common beam with an RF signal to produce sidebands offset from frequencies of the plurality of optical signals by the frequency of the RF signal;

an etalon having a periodic transfer function that filters the modulated common beam such that the optical signals in the filtered, modulated common beam function as receiver channels corresponding to respective different RF frequencies;

a wavelength splitter configured to separate the filtered, modulated common beam into a plurality of channel output signals whose intensities are a function of the frequency of the RF signal; and

a plurality of detectors that respectively measure the intensities of the channel output signals to indicate the frequency of the RF signal.

2. (Original) The photonic channelized receiver of claim 1, wherein the plurality of optical signals corresponds to a plurality of respective frequency channels and the etalon has a plurality of etalon transmission peaks corresponding to the respective frequency channels, such that a frequency offset between a frequency channel's etalon transmission peak and optical signal varies among the frequency channels.

3. (Original) The photonic channelized receiver of claim 2, wherein each frequency channel corresponds to an RF frequency that is a function of the offset between the frequency channel's etalon transmission peak and optical signal.

4. (Original) The photonic channelized receiver of claim 1, wherein the optical signals are substantially equally spaced with a first frequency spacing, and the etalon has periodic transmission peaks that are substantially equally spaced with a second frequency spacing different from the first frequency spacing, such that frequency offsets between corresponding optical signals and etalon transmission peaks vary for successive optical signals.

5. (Original) The photonic channelized receiver of claim 1, wherein the optical source comprises a plurality of continuous wave (CW) lasers.

6. (Original) The photonic channelized receiver of claim 1, wherein the optical source comprises a plurality of continuous wave (CW) Dense Wavelength Division Multiplexed (DWDM) Communications laser sources.

7. (Original) The photonic channelized receiver of claim 1, further comprising Dense Wavelength Division Multiplexed (DWDM) wavelength lockers that lock the optical source to set wavelength offsets from ITU grid wavelengths.

8. (Original) The photonic channelized receiver of claim 1, wherein the optical combiner comprises a Dense Wavelength Division Multiplexer.

9. (Original) The photonic channelized receiver of claim 1, wherein the electro-optical modulator comprises an electro-optical phase modulator.

10. (Currently Amended) The photonic channelized receiver of claim 9, wherein the electro-optical phase modulator comprises a ~~LiNiBO~~ lithium niobate electro-optical phase modulator.

11. (Original) The photonic channelized receiver of claim 1, wherein the electro-optical modulator comprises an amplitude modulator.

12. (Original) The photonic channelized receiver of claim 11, wherein the electro-optical amplitude modulator comprises a Mach-Zehnder amplitude modulator.

13. (Original) The photonic channelized receiver of claim 1, wherein the etalon comprises a Fabry-Perot etalon.

14. (Original) The photonic channelized receiver of claim 1, wherein the etalon comprises a fiber-coupled high-finesse etalon.

15. (Original) The photonic channelized receiver of claim 1, wherein the wavelength splitter comprises a Dense Wavelength Division Demultiplexer.

16. (Original) The photonic channelized receiver of claim 1, wherein the wavelength splitter comprises a fiber-coupled device.

17. (Original) The photonic channelized receiver of claim 1, wherein the detectors are high speed optical detectors whose outputs yield near real time measurement of the RF signal.

18. (Original) The photonic channelized receiver of claim 1, wherein optical source is one of a plurality of optical sources operating in parallel and the electro-optical modulator is one

of a plurality of respective electro-optical modulators operating in parallel to provide a wideband channelized receiver capability.

19. (Original) The photonic channelized receiver of claim 1, comprising a plurality of corresponding optical sources, electro-optical modulators and etalons operating at different frequency bands to provide a respective plurality of receiver channel bandwidths.

20. (Original) The photonic channelized receiver of claim 1, wherein photonic channelized receiver is a photonic RF spectrum analyzer.

21. (Currently Amended) A photonic channelized receiver, comprising:

means for producing a plurality of optical signals at respective, spaced wavelengths at the receiver;

means for combining the plurality of optical signals into a common beam at the receiver;

means for modulating the common beam with an RF signal to produce sidebands offset from frequencies of the plurality of optical signals by the frequency of the RF signal at the receiver;

means for filtering the modulated common beam such that the plurality of optical signals in the filtered, modulated common beam function as receiver channels corresponding to respective different RF frequencies;

means for separating the filtered, modulated common beam into a plurality of channel output signals whose intensities are a function of the frequency of the RF signal; and

means for measuring the intensities of the channel output signals to indicate the frequency of the RF signal.

22. (Original) The photonic channelized receiver of claim 21, wherein the plurality of optical signals corresponds to a plurality of respective frequency channels and the means for filtering produces filter transmission peaks corresponding to the respective frequency channels,

such that a frequency offset between a frequency channel's filter transmission peak and optical signal varies among the frequency channels.

23. (Original) The photonic channelized receiver of claim 22, wherein each frequency channel corresponds to an RF frequency that is a function of the offset between the frequency channel's filter transmission peak and optical signal.

24. (Original) The photonic channelized receiver of claim 21, wherein the optical signals are substantially equally spaced with a first frequency spacing, and the means for filtering has periodic transmission peaks that are substantially equally spaced with a second frequency spacing different from the first frequency spacing, such that frequency offsets between corresponding optical signals and filter transmission peaks vary for successive optical signals.

25. (Original) the photonic channelized receiver of claim 21, wherein the means for modulating phase modulates the common beam.

26. (Original) the photonic channelized receiver of claim 21, wherein the means for modulating amplitude modulates the common beam.

27. (Currently Amended) A photonic channelized receiver, comprising:

an optical source, of the receiver, that produces a plurality of optical signals at respective, spaced wavelengths, wherein each of the plurality of optical signals is modulated with an RF signal to produce sidebands offset from frequencies of the plurality of optical signals by the frequency of the RF signal;

an optical combiner, of the receiver, configured to combine the plurality of optical signals into a common beam;

an etalon having a periodic transfer function that filters the common beam such that the optical signals in the filtered common beam function as receiver channels corresponding to

respective <u>different</u> RF frequencies;

a wavelength splitter configured to separate the filtered common beam into a plurality of channel output signals whose intensities are a function of the frequency of the RF signal; and

a plurality of detectors that respectively measure the intensities of the channel output signals to indicate the frequency of the RF signal.

28. (Original) The photonic channelized receiver of claim 27, wherein the plurality of optical signals corresponds to a plurality of respective frequency channels and the etalon has a plurality of etalon transmission peaks corresponding to the respective frequency channels, such that a frequency offset between a frequency channel's etalon transmission peak and optical signal varies among the frequency channels.

29. (Original) The photonic channelized receiver of claim 28, wherein each frequency channel corresponds to an RF frequency that is a function of the offset between the frequency channel's etalon transmission peak and optical signal.

30. (Original) The photonic channelized receiver of claim 27, wherein the optical signals are substantially equally spaced with a first frequency spacing, and the etalon has periodic transmission peaks that are substantially equally spaced with a second frequency spacing different from the first frequency spacing, such that frequency offsets between corresponding optical signals and etalon transmission peaks vary for successive optical signals.

31. (Original) The photonic channelized receiver of claim 27, wherein the optical source comprises a plurality of continuous wave (CW) lasers.

32. (Original) The photonic channelized receiver of claim 27, wherein the optical source comprises a plurality of continuous wave (CW) Dense Wavelength Division Multiplexed (DWDM) Communications laser sources.

33. (Original) The photonic channelized receiver of claim 27, further comprising Dense Wavelength Division Multiplexed (DWDM) wavelength lockers that lock the optical source to set wavelength offsets from ITU grid wavelengths.

34. (Original) The photonic channelized receiver of claim 27, wherein the optical combiner comprises a Dense Wavelength Division Multiplexer.

35. (Original) The photonic channelized receiver of claim 27, wherein the etalon comprises a Fabry-Perot etalon.

36. (Original) The photonic channelized receiver of claim 27, wherein the etalon comprises a fiber-coupled high-finesse etalon.

37. (Original) The photonic channelized receiver of claim 27, wherein the wavelength splitter comprises a Dense Wavelength Division Demultiplexer.

38. (Original) The photonic channelized receiver of claim 27, wherein the wavelength splitter comprises a fiber-coupled device.

39. (Original) The photonic channelized receiver of claim 27, wherein the detectors are high speed optical detectors whose outputs yield near real time measurement of the RF signal.

40. (Original) The photonic channelized receiver of claim 27, wherein photonic channelized receiver is a photonic RF spectrum analyzer.

41. (Currently Amended) A method of detecting an RF signal, comprising:

a) generating a plurality of optical signals at respective, spaced wavelengths;

b) combining the plurality of optical signals into a common beam;

c) modulating the common beam with the RF signal to produce sidebands offset from frequencies of the plurality of optical signals by the frequency of the RF signal;

d) filtering the modulated common beam with an etalon, such that the optical signals in the filtered, modulated common beam function as receiver channels corresponding to respective different RF frequencies;

e) separating the filtered, modulated common beam into a plurality of channel output signals whose intensities are a function of the frequency of the RF signal; and

f) measuring the intensities of the channel output signals to determine the frequency of the RF signal.

42. (Original) The method of claim 41, wherein (c) includes phase modulating the common beam with the RF signal.

43. (Original) The method of claim 41, wherein (c) includes amplitude modulating the common beam with the RF signal.

44. (Original) The method of claim 41, wherein the plurality of optical signals correspond to a plurality of respective frequency channels and the etalon has a plurality of etalon transmission peaks corresponding to the respective frequency channels, such that a frequency offset between a frequency channel's etalon transmission peak and optical signal varies among the frequency channels.

45. (Original) The method of claim 44, wherein each frequency channel corresponds to an RF frequency that is a function of the offset between the frequency channel's etalon transmission peak and optical signal.

46. (Original) The method of claim 41, wherein the optical signals are substantially equally spaced with a first frequency spacing, and the etalon has periodic transmission peaks that are substantially equally spaced with a second frequency spacing different from the first frequency spacing, such that frequency offsets between corresponding optical signals and etalon transmission peaks vary for successive optical signals.

47. (Currently Amended) A method of detecting an RF signal, comprising:

a) generating a plurality of optical signals at respective, spaced wavelengths;

b) modulating the plurality of optical signals to produce sidebands offset from frequencies of the plurality of optical signals by the frequency of the RF signal;

c) combining the plurality of modulated optical signals into a common beam;

d) filtering the common beam with an etalon, such that the optical signals in the filtered common beam function as receiver channels corresponding to respective <u>different</u> RF frequencies;

e) separating the filtered common beam into a plurality of channel output signals whose intensities are a function of the frequency of the RF signal; and

f) measuring the intensities of the channel output signals to determine the frequency of the RF signal.

48. (New) The photonic channelized receiver of claim 1, wherein the photonic channelized receiver does not combine the channel output signals.

49. (New) The photonic channelized receiver of claim 1, wherein the plurality of detectors correspond to different RF frequencies and the photonic channelized receiver compares intensities of the channel output signals of the detectors to determine the frequency of the RF signal.

50. (New) The photonic channelized receiver of claim 21, wherein the photonic channelized receiver does not combine the channel output signals.

51. (New) The photonic channelized receiver of claim 27, wherein the plurality of detectors correspond to different RF frequencies and the photonic channelized receiver compares intensities of the channel output signals of the detectors to determine the frequency of the RF signal.

52. (New) The photonic channelized receiver of claim 27, wherein the photonic channelized receiver does not combine the channel output signals.

53. (New) The method of claim 41, wherein the channel output signals are not combined.

54. (New) The method of claim 47, wherein the channel output signals are not combined.

55. (New) The photonic channelized receiver of claim 1, wherein the receiver further comprises an RF antenna for receiving the RF signal.